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# EDITORIAL NOTES

## OPINION

THE Gas Industry is not suffering from lack of discussion on "things to come." From those actually in authority there has been a request that the Industry should attempt to define itself and to crystallize its aims. As a result, never before, we think, has there been such a welter of soul-searching and such a medley of thought—and quite a deal of it, caustic though it is, is both salutary and relevant. The "turn-out" at a meeting of the Eastern District of the Southern Association last week reflected well this introspective mood. A Paper was given on thought trend in the Industry, and it was avidly and at times trenchantly discussed. It was a meeting marking the termination of a wartime session which has seen a 60% increase in attendance over previous pre-war sessions when travel was easy, staff more numerous, conditions pleasanter, and when the Industry was just jogging along in a contented manner amid deep pricks of competition but hoping for the best. Since September of 1939 a douche of cold facts has made the Industry shiver temporarily, waken up a little, and talk considerably. Some of the talk has been incisive, and we hope and believe that it will lead somewhere.

Discussions have been marked during the past year by a biting pungency which is altogether healthy, and on many occasions from within its own ranks the Industry has been made to look uncommonly complacent and singularly unattractive. This in spite of its acknowledged intrinsic merit and whole-hearted acceptance that the Industry is well-meaning and by and large highly principled. But what are these principles? It has been salutary and refreshing that discussions during the past twelve months or so have constituted a challenge to conceits which the Industry may have fostered, and have pricked many highly inflated gaseous bubbles. We think that from the outside view the Gas Industry is regarded as drab. There is, however, no need for it to be drab. The Industry is sound enough; but that is not sufficient in itself. We must make it more attractive and vastly more receptive of new ideas.

Perhaps for the reason that we are fighting to-day squarely against sadism we are tempted to over-rate masochism and become too severely self-critical. Be that as it may, some of the criticisms voiced by younger members of the Industry are vivid, and they may not be wholly palatable to some of the older members. They are criticisms which, however, ought not to be lightly dismissed; they are far too real for that. At the moment we are thinking of last Thursday's meeting of the Southern at Gas Industry House and of some of the views then expressed—views which seem to us to be symptomatic of a vigorous unrest in the Industry against the commonplace. We hope to return later to discuss other aspects of the Paper presented, but there are one or two random points in the discussion which impressed us, and we think it useful to touch upon them briefly here in rather a random way, merely asking that they might be considered, as we think they are, quite important.

There was, for example, the impression of a newcomer to the Industry—a veritable greenhorn with only fourteen years' experience of it—who remarked that when he entered the Industry he was astonished by the "extreme" lack of urgency it exhibited, and amazed at the huge steady income which could have been available for modernizing plant and equipment. He could only feel bewilderment that so many gas undertakings preferred to spend their money in repairing and maintaining obsolete plant which could have been much more cheaply replaced by plant far less costly to run. Among the older members was the attitude, "It'll last our time. Why worry?" Or, if they became a trifle apprehensive, "Let us do some research. It's a slow job, and we can put off making a decision for many a long day." And there was talk about unfair competition. Competition, funnily enough, was always unfair when the Gas Industry was getting the worst of it. Was it really helpful that the Industry had developed a type of personnel which was begotten, born, brought up, and trained on its own doorstep—a type curiously impervious to the adoption of new ideas? Experience? Oh yes, very valuable, but anything but an aid to imagination.

Plenty of other unsugared thoughts were expressed, ranging from the value of red-hot salesmen galloping over the country like the hordes of Attila to the value of education in the Industry; from the coal industry to Gas Industry control. It was argued that the educational standards of the Institution are not high enough. Neither are the salaries offered by the Industry. Security there might be in the Industry, it was suggested; but security bribes lead to a concentration of mediocrity. And is there anything chaotic about control of supply of gas? One of those who joined in the discussion remarked that in his restricted area of supply there are two electricity companies, two water companies, four local authorities having water-supply powers, and a municipally-owned gas undertaking having part of its area intermingled in the area of supply of the two gas companies for which he is responsible. And then we talk glibly about consumer satisfaction and consumer interest!

The Paper and discussion were frank and interesting. An abstract of the Paper, by Mr. G. L. Braidwood, of the Gas Light and Coke Company, will be found on later pages of this issue of the "JOURNAL." We hope next week to publish a report of the discussion.

## COAL OUTPUT AND FUEL TARGET

MORE miners but less output was the essence of a recent reply to a question in the House of Commons by the Minister of Fuel and Power. Major Lloyd George said that in the 20 weeks ending with October last year the average weekly output of saleable coal was 95,000 tons more than in the corresponding period of this year. Yet the number of miners employed has increased by fully 10,000. In October of 1941 the percentage of absentees was 9.53. In October of this year the percentage of absentees was 1.25 greater. The time lost by coal face workers—and this has a greater effect on production than absence from other parts of the pit—has lately been 3% higher than the general average, and the difference is double what it was before the outbreak of war. Every 1% of additional absenteeism among coal face workers represents a loss of production of about 2,000,000 tons a year. If at the coal face 9% or even 10% is allowed for unavoidable or excusable absences, there is another 3% of absences which are unexplained—which represents 6,000,000 tons of coal a year. Is the conclusion to be arrived at that at a time such as the present a proportion of the better paid men, after reaching a given amount of earnings, are preferring more leisure to more income?

With these facts in mind we turn to the fuel target and Major Lloyd George's guarded optimism in a speech in Manchester last week. He expressed satisfaction with the progress made in fuel saving so far, though he added that he wanted no one to

imagine that everything in the garden is lovely. We have not yet reached the real winter period. The test is to come. He was, however, satisfied that if we continued our efforts we should see the winter safely through, provided we exercised ingenuity and were prepared for some inconvenience—and then "there would be time to sit down and consider the reorganization for which the Ministry of Fuel has been set up." In this vague reference there is obviously much for the Gas Industry to think about, and it is fortunate that considerable time and thought are being devoted throughout the country by gas executives to prepare themselves for whatever issues may be involved in this reorganization. Reverting to the Minister's speech. Major Lloyd George's comments concerning good and naughty boys were also rather vague. There was no doubt, he remarked, that the vast majority of consumers were playing their part in the Battle of Fuel, but it was equally true that some people were not. "Whether that is due to indifference or ignorance, I do not know," he added. "If it is indifference, all I can say is that this country cannot afford that type of indifference at the present time, and I shall do everything I can to see that it is not allowed to continue." What action does the Minister contemplate in the absence of any form of compulsory rationing? Even when the Government pleads for certain lines of behaviour there remains in the background that glib excuse for non-compliance —"Others are not; why should I?" On the other hand, ignorance concerning the use of fuel can be and in fact is being dissipated, and in helping to spread knowledge through fuel exhibitions and in other ways the Gas Industry has been and continues to be extremely active. The Minister of Fuel must surely be impressed by the energetic part which the Industry is playing in the fuel economy campaign.

## Appliance Research

American gas undertakings, representing nearly 5 million meters, were recently asked their opinions on war and post-war research, and their views have been published in summarized form in the American Gas Association *Monthly*. Specifically it is suggested that research and development should be undertaken to reduce the production and distribution cost of gas refrigerators, to improve the accessibility of unit gas burner assemblies to facilitate replacement, to ascertain if better types of heating equipment can be marketed for the low income consumer, to eliminate constant burning pilot lights, and to develop improved methods of igniting hotplate and oven burners. Generally, co-operation was urged between gas undertakings, the manufacturers of appliances, and the A.G.A. Laboratories and the Institute of Gas Technology. Improvement in appearance, it was stressed, should be sought in all appliances, "because with the manufacturing facilities, the inventive imagination, and the wealth of new materials which will be released after the war we can easily be outclassed by an aggressive, far-sighted competition unless we have taken strides in the interim to perfect our present position."

## Midland Section, Institute of Fuel

The work and activities of the Institute of Fuel, of which there are now over 1,250 members, have been reinforced by the inauguration of a Midland Section. This follows the provincial Sections at Manchester, Nottingham, and Derby, and it is both desirable and logical that an area with its centre in Birmingham—an area covering so many industries with such a varied field of manufacturing operations—should have its Section. Its establishment at the present time, when every effort is necessary in every sphere of fuel production and utilization to effect conservation and economy, is especially appropriate. A report of the inaugural meeting, when those present were addressed by the Director-General of Gas Supply, Dr. E. W. Smith, will be found in to-day's "JOURNAL." We wish the new Section, which has as its first Chairman Dr. C. M. Walter, of the Birmingham Gas Department, every success, and feel confident that it will serve a most valuable purpose in bringing about still closer liaison between engineers, chemists, fuel technologists, and fuel producers and users.

## 1942 "Journal" Directory

Page. 46. MARPLE. G. E. H. Keillor, *M.*, *vice* W. M. Gledhill.
„ 74. WARRINGTON. J. E. Wakeford, M.B.E., *E. & M.*, *vice* A. Cook.
„ 86. INVERURIE. W. T. Gilchrist, *E. & M.*, *vice* W. Macmillan.

## Personal

An interesting ceremony took place in the retort house of the Saint Blazey Gas-Works on Nov. 18, when Mr. FRANK NETTLE, Secretary of the Saint Blazey Gas Company, Ltd., was presented with a case of pipes by the staff and workmen of the Company. The occasion was to commemorate Mr. Nettle's 50th anniversary as Secretary of the Company—a position which he has held from the date of its founding. Mr. Nettle is now a Director of the Company, which is a constituent member of the South Western Gas and Water Corporation, Ltd.

## Letters to the Editor

### Westverticals in Action

DEAR SIR,—I should like to add a few further notes on points raised in the discussion on my Paper on Westverticals given to the Eastern Counties Association on Nov. 13.

The Westvertical plant was described by the President as a "half-way house" between installations of continuous and intermittent vertical retorts. This expression should be qualified, as it is applicable only to the characteristics of the products. A comparison of the respective yields of products of these systems does not indicate such a relationship, and from the point of view of cleanliness the plant closely resembles the continuous vertical process.

A member asked if the reduction of calorific value by dilution with producer gas did not take away some of the advantages which would accrue from a higher rate of steaming. Producer gas was added during the 1939 period because we were concerned during that time with experiments for the adaptation of a standard water-gas plant for the manufacture of producer gas for diluting horizontal retort gas. It will be observed that the total volume of this diluent in the 1939 period was only 11,083 therms, equivalent to 1.86% by volume. The addition of this producer gas did lower the thermal yield per ton of coal and the output of gas per chamber.

This member enquired also if the dropping of the charge into the cooling chamber resulted in the production of a large proportion of small coke. As in other carbonizing plants the size of the coke produced depends largely upon the coking properties of the coal, and the breakage attributable to the dropping of the charge is not as great as might be expected. With first-class Durham and Yorkshire gas coals, grading tests have shown that about 70% of the coke is rejected by a 2-in. screen. Recent deliveries of wartime coal have given a figure as low as 46% over 2 in. Breeze below ½ in. is about 6% in all cases.

The same member queried whether the substitution of solid bricks for panelled tiles in the chamber walls had been accompanied by an increase in fuel consumption. Since 1940 it has not been our normal practice to operate the plant on a carbonizing cycle of less than ten hours, so that a direct comparison of fuel consumption might be misleading. In the early years the carbonizing cycle was either 8 or 9 hours, and during 1938 the heating arrangements were modified. The solid bricks were introduced primarily to strengthen the chambers, and I do not think the fuel consumption has been affected by an appreciable amount, because the recesses in the panelled bricks represent only 26.5% of the total area of the interior walls of a chamber.

In reply to his question about the flexibility of the plant, the speed of operation is dependent not only on the rate at which the coal can be carbonized, but also on the time required to cool the coke in the cooling chamber. This latter condition is satisfied with 10% of steam on an 8-hour cycle, and therefore it will be appreciated that the plant can be operated over a wide range of outputs.

The Engineer and General Manager who has a Woodall-Duckham plant and described the differences in design and methods of operation asked about the free space above the charge in the Westvertical chamber. The coal takes the form of a cone with its centre under the coal "box." There is a small free space left within the heated zone at each end of the major axis, but this represents only about 1.6% of the space normally occupied by the coal charge.

Yours faithfully,
Nov. 30, 1942. GENERAL MANAGER AND CHIEF ENGINEER.

### Small Coke Boilers

DEAR SIR,—In regard to Mr. H. J. Toogood's letter published in your issue of Nov. 18, the inadequacy of fuel space in the small domestic hot water supply boiler has been recognized, and a hopper approved by the London and Counties Coke Association has been designed, as an expedient to overcome this. It is a plain cast-iron cylinder flanged at each end and holds about 4 lb. coke boiler nuts, which will keep the fire alight under slow burning conditions for an extra period of approximately four hours.

The cylinder is suitable for boilers with flat hotplates and circular coke inlets of 5¾ to 6¾ in. diameter, and the top accommodates the lid from the boiler hotplate. To obtain air-tightness the lid must be placed in the top of the hopper after charging with coke.

This extra supply ensures that the smallest boiler will remain alight all night, although it is agreed that the hopper extension is rather unattractive. A sketch of the appliance is available to any interested enquirer on application to the London and Counties Coke Association.

1, Grosvenor Place, S.W. 1. Yours faithfully
Nov. 26, 1942. F. A. HADDOCK.

## Manchester District Association

A Special General Meeting of the Manchester District Association of Gas Engineers was held at Leeds University on Nov. 27, Mr. J. E. Lister Cooper (Yeadon), presiding.

Mr. E. V. Evans, O.B.E., delivered an Informal Address upon some of the problems which will have to be solved by the Gas Industry in the future. A long discussion followed in which the Junior members of the Association were particularly invited to participate. [We publish Mr. Evans' Address to-day.]

It was announced that the following had been awarded certificates for passing the examinations mentioned:

*Gas Engineering* (*Manufacturing*)—*Higher Grade*.—External Candidates: J. C. Britton, Sheffield, 1st Class; J. R. Gregory, Oswaldtwistle, 1st Class; A. Blinkhorn, Bolton, 2nd Class; W. S. Harland, Rochdale, 2nd Class; J. Lomax, Colne, 2nd Class; J. Parker, Buxton, 2nd Class; J. Sapsford, Rochdale, 2nd Class. Internal Candidates: F. C. Barker, Ilkley, 1st Class; R. Lockett, Rochdale, 2nd Class.

*Gas Engineering* (*Supply*)—*Higher Grade*.—External Candidates: H. W. Kenworthy, Sheffield, 1st Class; R. Kinsey, Keighley, 2nd Class. Internal Candidates: C. Aveyard, Elland, 2nd Class; A. Cole, Bradford, 2nd Class.

The President remarked that it was gratifying to find that there were so many successful candidates for such desirable qualifications.

## Harrogate "Battle for Fuel"

To publicize the need for fuel saving in the Harrogate district an invitation was accepted by Commander Stephen King-Hall, M.P., to address a public meeting. On Nov. 21 he made a speech in the Royal Hall to over 1,000 people in which he defined in its simplest terms the Battle for Fuel.

Mr. J. A. Hall, leader of the Yorkshire miners, in the vote of thanks, spoke on coal from the utilization point of view.

In the afternoon, Commander King-Hall officially opened an Exhibition. In proposing the vote of thanks to the Commander, Colonel W. M. Carr, the Chairman of the Harrogate Gas Company, said that the Company was doing all it could to further fuel economy.

The whole Campaign and the Exhibition was the co-operated effort of all fuel interests. Mr. C. Bateman (Engineer and General Manager of the Gas Company) and Mr. A. Kelso (the Borough Electrical Engineer) were jointly responsible for the Exhibition arrangements and the various Ministries concerned gave every assistance, and the organization was carried through smoothly by Mr. F. W. Allum (Secretary of the Harrogate Gas Company).

## Building and Civil Engineering (Restriction on Transfer) Order, 1941

New Directions have been issued by the Minister of Labour and National Service under the Building and Civil Engineering (Restriction on Transfer) Order, 1941, modifying the present exemptions from the provisions of this Order. These Directions are published in the Building and Civil Engineering (Restriction on Transfer) (Exemption) Directions, 1942, and come into force on Dec. 7.

Under the Order local authorities and public utility undertakings are exempt as respects all classes of employees, except employees engaged in contract work for other persons—*e.g.*, where a local authority undertakes a constructional contract for a Government Department. All employers are exempt as respects all their employees who are transferred—

(i) For not more than 28 days to urgent repair work necessitated by enemy action; or

(ii) For not more than 14 days for the sole purpose of doing repair work urgently necessary for the avoidance of danger to life or health or for the repair or restoration of essential public services.

Certain classes of contractors whose undertakings are wholly or mainly engaged on the specialist activities in the list given below are exempt in respect of all employees actually engaged in the activities in question whether transferred for employment or loaned to other employers in similar specialist activities. The same exemption applies to a branch, department, or part of any undertaking if that branch, department, or part is mainly or wholly engaged in one of the specified activities. The activities referred to are: (i) Constructional steel erection; (ii) electrical contracting; (iii) heating, ventilating, and domestic engineering; (iv) plumbing and domestic engineering; (v) contracting work for the production, distribution, or maintenance of gas, water, or electricity supplies or the maintenance of sewers; (vi) furnace building; (vii) asphalting and tar-spraying; (viii) floor-laying; (ix) patent roofing or roofing-felt fixing; (x) scaffolding erection; (xi) glazing.

**The New Address** of Meters, Ltd., is 51, King Street, Manchester, 2.

**A Meeting** of the National Joint Industrial Council for the Gas Industry will be held at Gas Industry House on Dec. 8 at 11.30 a.m.

**A Meeting** of the Central Executive Board of the National Gas Council will be held at Gas Industry House on Dec. 8 at 2.15 p.m.

**On Dec. 10,** in the Connaught Rooms, Kingsway, W.C. 2, at 2.30 p.m., the Institute of Fuel is holding a meeting at which Mr. H. E. Partridge will present a Paper entitled "Fuel Economy at Collieries," to be followed by a discussion.

## "Utility" Gas Lighters

The Board of Trade's scheme for "utility" lighters now covers gas lighters, and of the various types that have been developed the cold catalyst type is probably the most economical from the point of view of materials. There are, however, lighters *and* lighters, and to differentiate between good and not-so-good catalysts a specification has been drawn up at the request of the Board of Trade and published by the British Standards Institution. The essentials of a good gas lighter are that it shall not be sluggish in action, and that it shall not become "poisoned" by sulphur dioxide fumes or water vapour. The tests laid down in the specification are designed to eliminate any lighters that do not come up to the required performance in these respects.

Copies of this specification (BS/BOT 20) may be obtained from the British Standards Institution, 28, Victoria Street, S.W. 1, price 1s. (1s. 3d. post free).

## Appliance Research

An article published in the A.G.A. *Monthly* includes information received from gas companies in America representing nearly 5 million meters on the questions of war and post-war gas sales, service, and research.

It it is suggested that research and development should be undertaken as follows:

1. To reduce the production and distribution cost of gas refrigerators and to improve their inside appearance.
2. The development of a gas range with distinctive and exclusive new features and conveniences so that gas cooking will dominate the post-war market.
3. Improvement of the efficiency of all gas-burning equipment with special effort toward the elimination of constant burner pilots and the improvement of control equipment.
4. Improvement of the accessibility of unit assemblies to assist in simplifying service problems and facilitate replacement rather than making necessary long periods of work and adjustment in the customer's premises.
5. Research in combustion and burner design.
6. Research by manufacturer to ascertain if better types of heating equipment can be put in hands of the low income customer.
7. The development of an improved method of lighting top burners, oven, and broiler burners from a central pilot on the top of the range.
8. Development of ways and means of converting coal and oil to gas more economically and to increase appliance utilization and efficiency.
9. Improvement of the appearance and efficiency of gas water heaters and the lowering of installation costs.

Several companies are actively engaged in their own research activities. One company has conducted a two-year study on house-heating research, and contemplates several years' additional study on this project. A five-room house has been built on company property constructed in such a manner that various types of furnaces may be installed both in the basement and above the floor, and the results of different areas of ducts and heat distribution studied and analyzed. Another project recently completed by this company involved the study of special vent cowls which may be installed in concealed locations on a roof and still promote good draught.

Other individual utility research includes new uses of gas, gas tubing and outlet connexions, base load studies, rate studies, and a project on tankless water heaters, utilizing conversion burners and boiler equipment with tankless water heaters.

**A Joint Meeting** of the Eastern and Western Districts of the Scottish Junior Gas Association was held in Glasgow on Nov. 14. Mr. A. Shand (President of the Western Association) presided, and Mr. C. P. Jenkyns gave a lecture on Steam Raising and Boiler Equipment. The lecture was followed by a discussion.

**The British Gas Industry** is portrayed to the world in a series of beautiful and spectacular photographs taken recently by the British Council by arrangement with the British Commercial Gas Association. The British Council is under the jurisdiction of the Foreign Office, who founded it for the purpose of maintaining cultural relations with the Empire and foreign countries. Four hundred copies of the photos will be circulated to 135 centres throughout the world, including the Empire, Latin America, Russia, Middle East, Far East, and all neutral countries. They deal solely with the manufacture and distribution of gas, and will in most cases be accompanied by a short technical article. A selection of these will be displayed shortly in the main hall of Gas Industry House.

**The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.**

# MIDLAND SECTION OF INSTITUTE OF FUEL

## FUEL BATTLE PROBLEMS

ASPECTS of the fuel problem were discussed at the inaugural meeting of a Midland Section of the Institute of Fuel. The Council of the Institute has sanctioned the formation of the Section in view of the urgent importance of the efficient utilization of fuel. Dr. C. M. Walter, of the Birmingham Gas Department, is the Chairman of the new Section, and the Joint Honorary Secretaries are Mr. A. F. Webber and Mr. C. F. Wade.

The inaugural meeting was held in Birmingham on Nov. 14, when Dr. E. W. Smith gave an Address on "The Battle for Fuel in Industry: How it is Going."

Following a luncheon, Dr. **Walter** explained the objects of the Institute, and he went on to point out that during the last few years fuel technology, which is associated with practically every industrial process, had at last been given the consideration that it deserves. During this period much has been done to improve efficiency in the utilization of fuels in the factories. There has been close liaison between engineers, chemists, and fuel technologists in the study of fuel utilization, and this has resulted in fuel problems being investigated in the most satisfactory manner with a view to obtaining the highest possible efficiency, and also to ensure that the right type of fuel is employed in any particular process. Already provincial centres have been formed at Manchester, Nottingham, and Derby, and he thought everyone would agree that in the case of a city like Birmingham, with so many industries covering such a varied field of manufacturing operations, it was none too early to form a Section for the benefit of fuel technologists.

In the present conflict it was essential that all fuels should be used with the greatest possible economy, and that everything should be done to ensure that fuels should be used to the best possible advantage and that waste should be reduced to a minimum. "In this connexion," he said, "I am sure the Institute can do much to give assistance from a national point of view, and also help in the further organization of schemes that have already been put into operation, all with the one object of conserving fuel."

Dr. Walter presided at a subsequent meeting.

### Address by Dr. E. W. Smith

The Director-General of Gas Supply (Dr. **E. W. Smith**) congratulated the engineers and chemists of the Birmingham area upon the formation of the local Section. There might be different ideas, he said, as to how the Institute of Fuel should function, but on this matter, if the Institute of Fuel or its local Section conceived it their job to run everything in connexion with fuel, then they were going to cut across many activities that were running smoothly. It was, however, generally understood that the primary object of a local Section, or of the Council of the main body, was to hold a watching brief for everything relating to fuel, to provide a platform when required, and to co-ordinate where necessary, but never to do a job that someone else was doing satisfactorily.

"If," he said, "the local Section follows that principle there is going to be no overlapping but quite an important place for it, as there has been in the past for the national body in the fuel industries."

Dr. Smith referred to the important part that gas plays in relation to the munitions industry. He pointed out that in normal times the Industry carried 25% of spare plant capacity, but by 1941 the whole of that had been absorbed. They could not make munitions without gas.

He spoke of his experience in regard to the waste of gas, and said the contention had been made all through—and he hoped that Fuel Committees would appreciate this—that improvements were obtained primarily through administrative action, and not through chemists taking carbon dioxide analyses on the flue gases. They were told they could not interfere with workmen, but he thought it was worth while to let the workmen know they had a part to play.

Their first object was to save coal, and if they saved gas they did that. In the Gas Industry there had been less coal used than in the corresponding month of last year, despite the fact that munitions production was going up. He spoke favourably of the suggestion made about twelve months ago for the appointment of men known as "gas chasers." But they needed to be people with authority. It was necessary that from top to bottom should be fuel conscious. Then there would be no difficulty in getting all we require. "I am satisfied," he said, "that in industry to-day a great deal of gas is being saved."

On the domestic side many undertakings showed a reduction, but there were exceptions. In some places there was more money about, and women and others who went out to work used gas or electricity as a convenient method in preference to the use of coal. If less coal was required from the pits and there was enough plant and gas in a district, there could be no objection to the change-over. But where there was not enough gas it would be wrong to encourage the change, and gas undertakings would have to watch that carefully. In his view the fuel campaign had gone well and with improving effect. The anxiety one had was that the effect might not be maintained. There needed to be originality in putting before domestic and industrial consumers the points they wanted to drive home. There needed to be variation, and members of the Institute could help in this direction.

It was essential that the maximum backing should be given to every effort to conserve coal and gas. A great deal could be done in all districts, and it was for the local committees in the industry not only to study purely technical questions, but all matters relating to the use of fuels.

In the discussion, Mr. **R. H. Rawll,** speaking for the local centre of the Institution of Electrical Engineers, said that little more could be done in regard to raising the efficiency of generation. They had to look at the problem from the other end—the utilization of the commodity.

Mr. **A. H. Cranmer** (President of the Midland Association of Gas Engineers and Managers) said there was room for more economy in gas-works, but its attainment did not always lie with the gas engineer; it lay to a great extent with the people who controlled supplies of coal to gas undertakings. In carbonizing coal many different kinds of retorts were used. Those who allocated the different classes of coal to the different undertakings did not take into consideration what classes were suitable. The coal was not so clean as formerly. The ash content was higher and the sulphur content was higher, throwing a bigger strain on the plant. He thought a lot could be done if coal was allocated on the basis of what was supplied in 1938 and 1939.

As to the district, in Wolverhampton they had a staff of men going round the factories trying to secure economies. In some places they had been very successful; in others their advice had been ignored.

Dr. **A. A. Hirst** suggested that great developments in coal cleaning were possible. Coal owners were apt to say it paid them equally well to sell dirt as coal, and consuming industries said they did not operate coal preparation plants. Finance of such cleaning plants should be the joint responsibility of the mining industry and the fuel-consuming industries.

Mr. **T. F. E. Rhead** (Birmingham) pleaded for improved amenities for the workers in the Gas Industry.

Dr. **Smith,** replying, spoke of the necessity there had been for diverting coals from normal channels. If Mr. Cranmer was getting some coal that he thought wasteful, it was to be hoped that the other coal was going to a district that made munitions. It would appear, however, that gasmaking coals had been supplied to domestic consumers; if those coals had been retained for the Gas Industry it would have been better for everybody concerned. He emphasized the importance of small savings of gas such as through by-passes, which in the aggregate amounted to a large figure. He agreed amenities in the Gas Industry could be improved. There was room for proper canteens, better ventilation, and provision of baths and washing facilities. The remedy, however, did not lie entirely with the Gas Industry.

## Fuel Economy

The subjects covered by the 1942 issue of the *Fuel Economy Review* (the 21st volume to be produced by the Federation of British Industries, 21, Tothill Street, S.W. 1, price 2s. 6d.) are of topical urgency. With the general aim of encouraging, by improved operation and more careful supervision, further substantial savings in factory fuel consumption, the writers bring expert knowledge and first-hand experience to such vital matters as the removal and utilization of condensate, the efficient operation of heating furnaces, and water treatment for modern steam generating plant.

The significance in these times of producer gas is well covered by the contents of the *Review*, which include an article on the operation and maintenance of producer gas plant for industrial purposes, a second article on the right selection of bituminous coals for use in gas producers, and a short note on gas producer calculations.

Practical advice is also given in the *Review* on other aspects of efficient fuel practice, including notes on indigenous liquid fuels and the problem of pumping hot feed water.

## New Londex Process Timer

The range of automatic process timers manufactured by Londex, Ltd., 207, Anerley Road, London, S.E. 20, has been increased by a new type PR/KZ fitted with up to six dials driven by one common self-starting synchronous motor. This equipment makes it possible automatically to control six processes independently, and is especially suitable for multiple process timing, in connexion with which it is being used for opening and closing valves, starting and stopping pump motors and operating conveyor belts at pre-determined times, or repeating operations on any number of circuits. Adjustment can be easily effected and the total cycle can be seconds or any number of hours.

# JUSTIFICATION FOR DEVELOPMENT*

By E. V. EVANS, O.B.E., President of The Institution of Gas Engineers

THIS old Industry of ours, this old, "decadent," "defunct" Industry, is aflame with enthusiasm. Wherever I go, whether it be to a Senior or a Junior Gas Association, to the Gas Research Board, to the Post War Planning Committees, or to our Institution, there exists the same spirit of enthusiasm and endeavour. There exists reasonable discontent with the past, and a firm resolve to adjust our Industry to meet the conditions of the future. I have yet to meet a Member of our Institution who does not believe that a large extension of our Industry in the future is a duty we owe to the nation.

Let me first of all devote a few minutes to the matter of the Gas Engineering Advisory Boards that we are anxious to inaugurate throughout this country. The original idea of the Institution was to urge the creation of District Boards or Panels that should provide mutual help in the region that they embraced. So effective had been the work of the Midland Association scheme that it was evident its extension to all parts of the country would benefit the Industry as a whole. The desirability of the existence of these Boards became a necessity when it was found that the Director-General of Gas Supply required such organizations to operate in close contact with his Ministry for the purpose of effecting the best economy of fuel and the maintenance of the supply of gas. You will probably be aware that the Midland Association Panel has worked from its inception in the closest collaboration with the Directorate of Gas Supply. I am not surprised that this scheme of Advisory Boards has met with your approval, for it allows our Industry to manage itself rather than to be managed by others. But the Boards must not be just decorative. There is a good job of work to be done, and that job is to demonstrate to the Ministry of Fuel that the coal and oil used by gas undertakings, both large and small, are being used as efficiently as the present national facilities allow. To achieve the maximum economy in gas manufacture constitutes an additional contribution that we can make towards the winning of the war, and your desire that the problem should be solved from within the Industry is expressed by the readiness with which you have adopted the scheme.

It does not come within my province to discuss the details of procedure to be adopted by your Advisory Board; its development is a matter that concerns you rather than the Institution. It is considered appropriate, however, that there shall be a co-ordinating committee under the aegis of the Institution and to which each region shall send two representatives. Such a Committee would serve to co-ordinate the work of the regions. It should confine its scope to the discussion of broad principles or to the consideration of composite figures. For it must be clearly understood that the working results of an undertaking are given in strict confidence to the Advisory Boards. The success of the scheme depends upon the creation of an atmosphere of confidence and good will. On the other hand, it must also be understood that the Director-General will call upon the Advisory Boards for detailed information and for detailed reports, and it is unnecessary to add that he is entitled to do so.

The significance and implications of this first move you have taken to set up a technical Advisory Board require your careful consideration.

It constitutes the first step towards regional co-operation. Not that abstract co-operation of pre-war days, but concrete and effective co-operation that is so necessary for the development of our Industry. It does not follow because an undertaking is large that it is efficiently managed, or that the ability and standing of a gas technician is directly proportional to the gas output of his undertaking or to the number of consumers he serves. There are many small undertakings whose process results and service to the consumer are examples to be followed by others. But the small undertakings cannot possess the technical staff and equipment necessary to them. It is hoped that such facilities will become available to undertakings requiring them by the operation of an Advisory Board, whose main object is to provide mutual help.

As a first consideration in the development of our Industry in the future I think it will be generally conceded that:

1. The Industry should develop itself with the Ministry of Fuel ready and able to give sympathetic and practical assistance.
2. Development should take place regionally and upon a co-ordinated policy.
3. The underlying principle of development should be that our Industry shall make a greater and greater contribution to the national economy and coal conservation, and provide a greater service to the community. The interests of the shareholders and taxpayers, though here considered to be secondary, would, by such a policy, be more than ever protected.

To achieve these ends the Industry must come together. We are not competitors, we each play a part in the maintenance and development of a great Industry and we are justified in looking upon this scheme that you are about to institute as a step in the required direction.

However important a part our Industry may have played in the national economy in the past, it is our duty to make a far greater contribution in the after-war years, and the contribution we can and should make to the solving of the problems of coal conservation, a clean atmosphere, the reduction of transport and the provision of the easily managed home, must be clearly understood by all Ministries whose duty it is to rebuild our nation. Let us attempt, therefore, to consider generally what we are at present achieving and the justification for our further development.

In our service to the domestic consumer we have, up to the present time, been mainly engaged in providing heat for cooking and for lighting. It is true that we have provided heat also for space heating, water heating, and refrigeration, but these are relatively undeveloped spheres of action. Gas used for lighting is becoming of decreasing importance and thus, to-day, gas for cooking forms the major part of our service to the domestic consumer. That service in itself is of great national importance. So that we shall not underrate the importance of our service, let us compare the performance of a modern gas cooker with that of the coal kitchener which it has displaced. The coal kitchener had a tremendous appetite for fuel, and would consume easily 1 cwt. of coal a week or 2½ tons a year. Now the gas cooker will do this work with about 75 to 80 therms a year—that is, the gas obtainable from one ton of coal. Even then there will remain half-a-ton of coke, and it may be said, therefore, that the cooking for the normal family is accomplished with only half-a-ton of coal a year when gas is the agency. We must remember, however, that the kitchener did much to warm the kitchen—often too much for the comfort of the housewife—and perhaps we should allow the half ton of coke to provide the warmth which is necessary. Even so, we have saved a ton and a half of coal and, in many cases, probably more.

In order to appreciate what this means as a contribution to the national economy and service to the community, I have found it best to consider the case of a fair-sized town in which all the cooking is done by gas instead of by raw coal. Such a town might be one of 200,000 inhabitants—that is, of some 50,000 families.

Now such a town has saved 75,000 tons of coal annually. Seventy-five thousand tons less to be distributed through the streets and about 7,500 tons less ashes to be collected. Two thousand tons less smoke is poured into the atmosphere and 3,000 tons less sulphur dioxide evolved.

In addition to this, the gas undertaking has recovered half a million gallons of tar, 150,000 gallons of benzole, 250 tons of sulphur, and 150 tons of ammonia. And the consumer pays no more—and often a little less—for an incomparably better service.

So much for the cooking load, the majority of which we hold. But the heat required for cooking the food for a family represents only about one-fifth of the total heat service needed for all purposes. Surely a system which has proved so advantageous and so successful in dealing with one-fifth should be applicable to the remaining four-fifths with still further gains. I feel confident our Industry will be able to show that it is possible both technically and economically. You are already aware of the general lines upon which we intend to proceed to develop this additional heating load, and on the present occasion it is not proposed to deal with this aspect of the question. For we are dealing with the benefits which would accrue to the nation and to the community as the result of the extension of our gas manufacturing process.

Let us therefore consider what would be achieved if this same town of 200,000 inhabitants ceased to use raw coal in its homes. Let us assume that half the families used half gas and half coke as the source of heating, and the other half used gas exclusively. The amount of coal required in that town would then fall by a further 67,000 tons a year. All domestic chimneys would cease to emit smoke, and the sulphur emitted would be reduced to one-eighth of that which we endure at present. Nearly 200,000 tons less fuel would be carted through the streets and 20,000 tons less ashes collected. The tar and benzole made available would be increased to 3 million gallons and to nearly 1 million gallons per annum respectively. In addition, some 100,000 tons of coke would be surplus and could be made available to industry, reducing by this amount the quantity of solid fuel brought into the town for industrial use and making a further contribution towards the elimination of smoke. It is a simple matter for you to correct these figures to the population of your own area of supply, and I will leave those calculations, and the thoughts that arise from them, to you.

Of course, we must not expect the other branches of the fuel industry to see the same advantages as we do in the extended use of gas and coke. Solid fuel appliances are being and will continue to be improved both in efficiency and appearance, but the problem of designing appliances for the combustion of coal containing much volatile matter is beset with difficulties, and a consistent prepared fuel, such as coke, is to be preferred.

Some electricians have been known to say that whatever can be done by gas can be done better by electricity, but this is contradicted by facts. Electricity is not a fuel but is a form of energy up-graded

* An Address to the Manchester District Association of Gas Engineers, Leeds, Nov. 27.

from heat at the sacrifice of some three-quarters of that heat. It cannot be stored but must be used as generated. This is a serious drawback, for a variable hourly load is of consequence to the electrician. The Gas Industry, though recognizing the importance of the load factor in its contribution to reducing the costs of supply, is concerned with seasonal changes only. It is not a difficult matter to compute the influence of change of load in the case of electricity and of gas, but a change of load is a far more serious matter in the case of electricity. Our present business usually gives a seasonal load factor of about 60%—that is, the equivalent of 220 maximum days in a year. Development of the domestic heating load by the Gas Industry might well reduce this load factor to 50%, but such a decrease is tolerable without undue increase in cost, because our capital requirements per therm are not high and hour-to-hour variations in demand are smoothed out by storage. If we had to superimpose the hourly variations upon the seasonal variations it is doubtful whether we could achieve a load factor as high as 25%. This is the problem with which the electrical industry would be faced if they attempted to take the whole domestic heating load by the so called all-electric house. Their problem is aggravated by the fact that the capital costs of electrical generating and distributing plant *per useful therm supplied* are double those we have to face. So that the electrical enthusiast who states that what can be done by gas can be done better by electricity is certainly not considering the problem from the viewpoint of the nation's economic welfare, or indeed from the point of view of cost to the consumer.

I know that when an electrical supply undertaking provides such necessary service as lighting and power there are off-peak periods when its plant can supply electricity at a low cost, and I believe there is much to be said for using this plant for such purposes as storage water heating. This is one of the means whereby the two industries could be made complementary to each other. By so doing the existing electricity load factor of 33% could be increased to 50% with an increase in units sold to consumers to about double the present figure and a reduction of about 30% in the average cost of supply. Such an arrangement would be of immense value to the electrical industry. But the electrical industry must desist from deliberately taking on business of such poor load factor characteristics as the cooking load and then asking for further storage heating to balance the error.

You must allow me to give one more example in this argument of the national importance of the Gas Industry. Supposing there were no gas undertaking in our imaginary town and that the electricity supply undertaking endeavoured to carry the load, it would be found that the heavy winter heating load would give altogether too poor a load factor and too high a cost of supply and it would be necessary to resort to raw coal. (It could not be to coke for there would be no gas undertaking.) Even so, the electrical load factor could hardly be higher than the present figure of 33% and the average revenue required would be about 1d. per k.w.h. If half the domestic heat requirements were met by coal and half by electricity, our town would need to purchase 50,000 tons more coal than at present and nearly 120,000 tons more than if it had developed its gas undertaking. Domestic smoke would amount to 4,000 tons a year, and unless the power station waste gases were chemically treated, sulphur pollution would be worse than it is to-day. There would be no credits for tar or benzole *and the domestic consumer's fuel bill would be nearly double*. I have not developed the point of the capital required to build so large an electricity generating station, but it would be more than twice as much than if the domestic heating load had been supplied by gas and coke.

# THOUGHT TREND IN THE GAS INDUSTRY*

By G. L. BRAIDWOOD, Gas Light and Coke Company

BEFORE we can plan for the future it is necessary to decide what, in general outline, we desire; and there is obviously as yet nothing approaching general agreement—there will never be unanimity. I do not subscribe to the theory that discussions now as to the future are a waste of energy and should be left until after the war. On the contrary, I consider they are essential. Failure to anticipate the changes which must come is a tacit admission that one is prepared to let future circumstances govern one's actions, instead of striving to shape a policy towards definite ends. I am persuaded that there is still, though a minority, a surprisingly large number of persons who have little conception of the magnitude of the changes which this war has made inevitable; they still think in terms of a return to normal, by which they mean pre-war conditions. Such a return is impossible. There is the danger, however, that the sense of urgency and dangerous living which is prevalent in wartime may give place to the reaction of *laisser-faire* and complacency which a return to peace encourages.

The Gas Industry must not lag behind in adapting itself to new ideas which, though now in a fluid state, are likely to be of a revolutionary and far-reaching character. A realistic, intelligent appreciation of the future will involve the discarding of prejudices and that conservatism of outlook which has been a national failing in the past, because we can only plan for our Industry with energy and courage if there is widespread agreement and whole-hearted co-operation. It is probably true to say that most people in the Industry now realize that without certain radical alterations in organization its future is likely to be regressive instead of progressive.

We are vitally affected by conditions in the coal industry, which supplies the life blood of our own. Part 1 of the Coal Mines Act, 1930, subjected public utilities to compulsory price increases at the discretion of the collieries, and the District Coal Scheme of 1936 gave the Executive Board control of the allocation of output among the owners and denied to gas undertakings the right to select suitable coals. This unprecedented piece of legislation is a negation of the accepted canons of fair trading and quite contrary to democratic principles.

## Out-of-Date Legislation

For years the Gas Industry has tried to obtain more equitable legislation, for the B.o.T. supervisory powers originally granted to safeguard the consumer when gas was a monopoly were unjust in the recent years of violent competition. The Industry is severely handicapped in its method of charge. The Gas Undertakings Bill of 1934 contains certain provisions of value, but the recommendation of the Wrottesley Committee in 1933 for the authorization of minimum charges was not agreed to, nor was the simplification of procedure in securing unopposed B.o.T. Orders. Multi-part tariffs must still give the option of a flat rate charge, so that the Gas Industry with its statutory regulation of dividends by the price of gas charged to the smallest consumer finds itself with a low flat rate in comparison with other fuels. If the uneconomic consumer paid his share of the standing charges, better tariffs could be offered to the economic consumer and so increased business could be obtained. There is in addition grievance in the expense and delay incurred in promoting private Bills in Parliament.

There are two kinds of competition from which we have suffered in the past—that sometimes met with in municipal trading and the unfair discrimination occasionally exercised by local authorities, and that between gas and electricity, which is wasteful and anti-social. It has become a platitude to say there is room for both. In the past the Government have shown a bias towards electricity. If there is to be a National Fuel Authority after the war it should be capable of impartial and scientific enquiry into their economic division of function, linked with a wider consideration of national fuel economy; and it should have power to act as well as recommend.

## Education and Personnel

It is impossible to overestimate the importance of education. Does not the main fault lie in our fundamental attitude towards education? Since the artisan class, who form the large majority, leave school at about 14—the earliest age at which education proper can commence—it is obvious that the nation leaves untapped a great proportion of its potential ability in addition to depriving those concerned of a fuller and more comfortable life. Among the upper classes too many are encouraged to believe during adolescence that learning to play games and to distinguish between what is and what is not "done" are of primary importance, and in later life that making money is more desirable than service to the community. The latter charge can hardly be sustained against the professional classes. Misdirected education or lack of it is self-evident in our failure to cope with our great social and economic problems, and is to be seen in much that is cheap and vulgar in life to-day, from architecture to amusements. We want the best workmen and the best executives, and should therefore appreciate what is lacking in our educational system. I regard our present educational system as patchy, often inadequate and unimaginative, and on the whole inferior to that of the Scandinavian countries.

Technical instruction is well taken care of in the Gas Industry, though some undertakings are too remote from the nearest source for their employees to take advantage of it. In such cases would it not be feasible for neighbouring undertakings to provide instruction themselves through a pool of their own staffs? Many of us hope that the younger men will have a big say in the future of the Industry, serve on its Committees, and voice their opinions freely. An encouraging sign has been the marked virility in some of the many recent discussions, especially among the so-called Juniors of the Industry.

The vexed and much discussed question of salaries cannot be divorced from that of education, for if the Gas Industry wants the best men it will have to pay for them. A minimum scale, which has been

* From a Paper to the Southern Association of Gas Engineers and Managers (Eastern District), Nov. 26.

under consideration for some time, has now been recommended by our Committee elected to do so, together with those from other Associations. The formulation of a minimum scale has been objected to on the grounds that it might tend to become a maximum. The reply to this is surely two-fold. Has it actually done so in an analogous case, as, for instance, in the electrical industry? Secondly, and irrespective of what may be the case elsewhere, is the Gas Industry going to be so short-sighted as to imagine that by being parsimonious in this matter it will do otherwise than penalize itself most severely and out of all proportion to the saving involved?

I deprecate the type of advertisement which invites the applicant to state what salary he requires. I cannot believe that the best type of candidate is thereby attracted or that the undertaking itself benefits in the long run. The advertizing of positions for which considerable qualifications and experience are required for less pay than a stoker receives in a decent undertaking is a disgrace to the Industry, lowers its prestige, and discourages the right sort of entrant into it. It is also regrettable that the National Gas Council is not in a position to put a stop to the farce of positions being advertized which have already been ear-marked for some chosen individual.

## Effects of the War

The unprecedented intermingling of town and country people due to evacuation, and of both sexes in different grades of society in the Forces and in war-time civilian organizations, has led not only to a general interchange of ideas, but possibly also to a desire to retain certain features of communal life, such as kitchens and restaurants, and to enjoy in the future more social intercourse. Here is an opportunity for gas to show its paces. It is also a main part of town and country planning in abolishing slums to stop the spoliation of the countryside by the wen-like growth of the big towns and to give the workers not merely better homes, but, as far as possible, better surroundings in which to work and live. This, in effect, means bringing the town to the country and *vice versa*, and so a tendency towards more even distribution of the population. If the Gas Industry were to retain its present structure, which (we hope) is extremely unlikely, the load of the town works would tend to fall and that of the country ones to increase. It is probable, however, that regional grid distribution will be the policy of the future. In any case, with new houses being built by the hundred thousand there will be the opportunity of the century for gas to enter new homes.

You can sell more gas if you cheapen it, and you may cheapen it if you sell more of it. There have been three ways out of this impasse open to us: to find new uses for gas, in which much has been done, but it would be unwise to relay on any spectacular increase in the near future; to increase sales by promotional tariffs, in which something has been done and more could undoubtedly be done, but the limitations of this method are debatable; and by the discovery of some much cheaper method of manufacturing gas. The last as our ultimate goal is the most important, and we shall in due course achieve it. The experimental work in high-pressure gasification shows great promise, though it would be unduly optimistic to expect the fruition of this work in the very near future. Meantime there is a combination of potential load increases which augurs well if we grasp our opportunities.

Before the war cooking comprised about 75% of gas used in the average home, which emphasizes the huge space and water-heating field open to us. Gas constituted only 7½% of the total heat requirements in the average household, raw coal amounting to about 70%. Masterman* has pointed out that 2 useful therms of coal at 2s. 1d. can be replaced at the same price by 1 of coke and 1 of gas, and that this would expand the Industry 2½ times, allowing 250 therms of gas and 1¼ tons of coke per household. He further pointed out that displacement of raw coal by gas would conserve 10 million tons. This shows the vital part gas could play in national fuel conservation, and is argument enough if any were needed for our strong support of the smoke-abatement movement.

There is an obvious need for the standardization of appliances in the price of which there is too wide a disparity, and the profit is sometimes greater than is justifiable or desirable.

## Coke

I cannot conceive coke production to be the primary function of our Industry or even, as an ultimate object, equally desirable to the production of cheaper gas. This, I know, is not in accord with some authoritative opinions. Apart from blast furnace work (which is in any case supplied from outside the Gas Industry), what is there which coke can do which gas cannot do better? Cost is surely the crux of the whole question. This is not to argue that every effort should not be made to improve the production and sale of coke, but appreciation of the fact that it is an essential factor in the economics of gas production at the present stage of its technique does not, in my opinion, in any way alter the fact that it is an anachronism for us to be selling two fuels of very different characteristics in competition with each other, and that the advantages we claim for gas are conspicuously lacking in coke.

Surely no engineer would regret the passing of coke, which involves so much time, trouble, and expense in its manufacture, treatment, and marketing, is extremely abrasive to expensive plant, and requires much handling, transport, and storage room at both works and consumers' premises. Until such time, however, as high pressure or complete gasification becomes general practice we must find the best markets we can for coke, and before the war encouraging progress was being made with the installation of coke fires. Coke is cheaper than coal, gives out better heat, contributes substantially to national fuel conservation, and helps to reduce the appalling damage to health and property due to smoke evolution. In the face of these facts I fail to see why we should be impressed by the argument that by displacing raw coal we are interfering with the traditional comforts of the English home.

## Advertising

If advertising did not exercise an enormous influence in the modern world the sale of inferior goods and quack remedies would not reach such huge proportions. In our case there can be no finer salesman than first class service. Great strides have been made since the last war in advertising gas, the high spot being Mr. Therm; but it is in the negative sense that the Gas Industry seems to me to be surprisingly casual. By this I mean those of its appliances in public places which give the impression that gas is out of date; for in spite of popular confidence in gas as a reliable source of investment many do think of it in that way. We have all seen at times in some public place the dreadful type of gas fire which is more an object of archaeological curiosity, the revenue from which must be many times out-weighed by the damage it does to the prestige of gas; many instances are also to be seen in the way of flat flame burners and hideous obsolete globe and mantle affairs used as stand-by in public-houses, halls, theatres, &c., which are noticed by thousands of people and do incalculable harm. Every such case should be ruthlessly tracked down and liquidated.

## Research

The Director-General has visualized the possibility of a central research organization housed under one roof, which seems to me an excellent thing; but the supporters of such a scheme are sure to meet with the argument that independent research is more likely to make new discoveries. I believe that a properly equipped and subsidized organization would yield far greater benefits than the present haphazard arrangement with its lack of close contact between the units concerned, inadequate staff and facilities, waste of effort due to skilled men having to perform comparatively menial tasks, and the overlapping which occurs. As an example of properly co-ordinated and subsidized research one might quote Russia, which spends 8 to 9 times as much on research as any other country, not excepting America, and leads the world in a number of widely differing fields of investigation, including the underground gasification of coal.

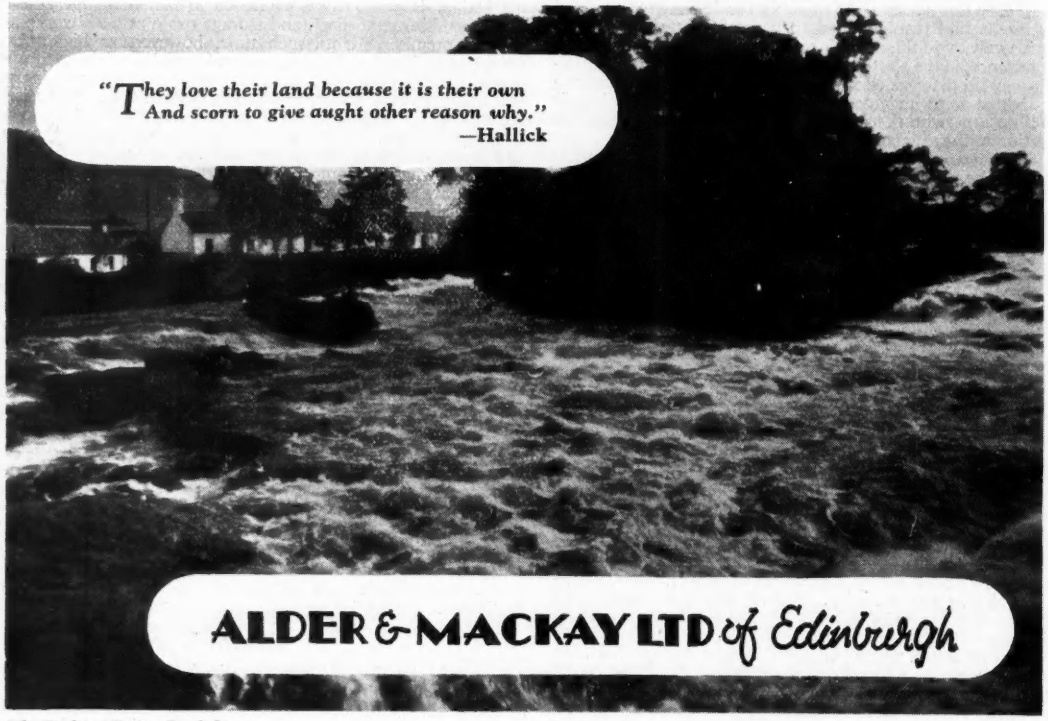
I have for a long time thought that it would have paid the Gas Industry to institute its own technocracy or brains trust, consisting of a full-time panel of experts in chemistry, engineering, accountancy, statistics, and administration—and perhaps also in finance and legislation. There is no justification for thinking that this would automatically relegate the rest of us to the position of the "boys in the back room." Their primary function would be not so much to answer questions (though this would fall within their scope) as to investigate the potential uses and sale of gas within the framework of existing or anticipated social conditions, to initiate original research, and to correlate and make recommendations upon existing information. For instance, is there now sufficient information to show how various tariffs react on different sections of the community and within certain income groups? It would be of the greatest assistance to many managers. There is presumably sufficient data for figures to be given indicating the capital and running costs, the efficiency and by-products to be expected from sundry types of manufacturing plant in certain sizes of unit. Again, a valuable lead could be given on the economics of coal and oil gas manufacture as affected by the coke market. The responsibility for doing so cannot continually be burked on the grounds that every undertaking has such different conditions, since for general purposes they could probably be divided under two main headings—sparsely or densely populated areas, and residential or industrial consumers. It is true that some of this information is already available in an indeterminate form, but only at the cost of much time and probably much confusion.

## The Press

If research is important it is no less important to make it known, and in this the Press has a vital part to play, as well as in representing the views of the Industry, while reserving to itself the right of independent criticism. We should therefore give it our fullest support.

I have suggested elsewhere what I feel are two urgent needs for the convenience of technical men in the Industry—a short summary of all Papers prepared by the Author, and a properly indexed register of all Papers to be kept not only at Headquarters, but at each of the regional centres or Associations. (The *Journal* of the Society of Chemical

* "The Future of Gas Appliance Design": I.G.E. Meeting, 1937.


"They love their land because it is their own
And scorn to give aught other reason why."
—Hallick
ALDER & MACKAY LTD of Edinburgh

*The Dochart, Killin, Perthshire.*

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Industry has recently made the provision of an abstract by Authors a condition of acceptance for publication.) The Bureau of Information to be set up by the Gas Research Board should fill a long-felt want. Another need, I have felt, is a readily accessible schedule of plant so that engineers contemplating renewal of plant may know where to find the most recent or suitable for their inspection.

*(To be concluded)*

# FUEL TARGET*

By E. S. STREDWICK, South Metropolitan Gas Company

*(Concluded from p. 259)*

The question now arises, Can and will the Gas Industry arrange for facilities whereby their consumers can take advantage of a clean and efficient room-heating service? To achieve this, a two-part system of charge or its equivalent is essential.

Some time ago my Company introduced a two-part system of charge, based upon a Standing Charge which was assessed according to the number of rooms and related to the rateable value, plus a low commodity rate. This is still operating, but owing to the many war-time restrictions, the prospect for its extension to-day is very much limited.

To show the gas potentiality such a tariff presents I give below details of the parity rate in therms per annum:

| Number o rooms. | Standing charges per annum.* | Parity rate, therms per annum. |
|---|---|---|
| 1–3 | £2 15s. | 81 |
| 4 | £3 6s. | 99 |
| 5 | £3 17s. | 118 |
| 6 | £4 8s. | 136 |
| 7 | £4 19s. | 154 |

* Assuming normal rateable values.

Broadly speaking the personal allowance—that is, the fuel required for cooking and water heating—was greater than the amount of gas that had to be purchased at the full rate before the low commodity rate was reached.

## The Personal Allowance

| Persons. | Therms. | Benefit stage. |
|---|---|---|
| 3 | 112 | Up to and including 4 rooms |
| 4 | 150 | 6 „ |
| 5 | 187 | 7 „ |

All additional gas used for room heating in these examples would be at the low commodity rate, which in our case to-day is 7d. per therm.

One thing at least the Fuel Target has done: it has taught the public to regard their fuel supplies as they should be regarded, whether gas or electricity, coke, or coal are used—the origin of all these fuels is coal.

The public to-day is being educated away from the habit of regarding the gas bill and the electricity bill as something entirely different from the coal bill. It remains for the Gas Industry to offer a complete domestic fuel service covering the whole of the ground that the Fuel Target covers.

No industry can thrive on decreasing returns; decreasing returns can apply even when there is an increase in the total output but a decreasing per capita or per consumer consumption.

The domestic water and room-heating loads are so attractive that our future activities cannot be other than to cultivate gas and coke sales for these services, rather than for the district staff to be employed on concentrated appliance selling. Our post-war slogan must be "Sell the Service"; appliance demand will follow.

## Discussion

Col. **F. J. Bywater** (South Metropolitan) remarked that they had listened to a practical Paper by one well qualified by his position and experience to deal with the subject. Everything should be done by them all to assist in the Government's fuel economy campaign. Looking to the future, it was necessary that the public should be made to realize that the burning of raw coal was not economy in the national sense; and to supplant raw coal by gas it was essential to offer gas at a low commodity rate.

Mr. **G. C. Holliday** (Gas Light and Coke) suggested that as an industry and in their praiseworthy enthusiasm for fuel economy they might tend to overestimate the importance of saving both gas and electricity. While every economy possible should be made in their use, they must not lose sight of the fact that the amount of coal used as solid fuel in the home was of the order of 40 million tons, the coal used as gas represented only about 6 to 7 million tons, and as electricity about 4 million tons. Room warming and water heating accounted for about ¾ of the fuel used in the home, and this was still mostly done by solid fuel. Only about ⅛ was used in cooking and $\frac{1}{20}$ in lighting and for miscellaneous purposes. Thus the simple fact emerged that if the gap between production and consumption was to be made good by economy, it was in solid fuel that the really big savings must be made. People must be made to realize that it was on this they must concentrate. Postponing lighting the coal fire and sharing with neighbours, cutting out the use of the coke boiler unless required for baths, reduction to a minimum of hot water usage, were the chief ways of saving the coal the nation needs. If every family saved only 5 lb. of coal—*i.e.*, two largish lumps—a day during the heating season, the nation would save over 5½ million tons a year.

This brought him to his second point. The public would inevitably look to the gas and electricity undertakings to give them advice on fuel generally, and they must be prepared to give it. They must not confine themselves to gas, but try to give them a proper perspective of their fuel problems as a whole. In the Gas Light and Coke Company instructions to showroom personnel on these lines had already been issued. He doubted very much whether the public, though now perhaps realizing that their fuels—whether gas, coke, or electricity—all came from coal, had any clear idea of the importance of gas and coke in the conservation of coal. As Mr. Stredwick had mentioned, the Gas Industry made four tons of coal, apart from extracting by-products, do the work of five tons used raw. Last winter many families owing to shortage of coal were sitting round their gas cookers in order to keep warm. By doing so they were definitely saving coal. There was no doubt that the Gas Industry had a really vital part to play in fuel conservation, and it was hoped that in the days of post-war reconstruction the Industry would be given a fair chance to show what it could do.

Mr. **F. Holland** (North Middlesex) spoke of the interest evinced by the public in their fuel target and their desire to be instructed in the best ways of saving fuel—how their various savings could be properly apportioned. And in giving advice gas undertakings could afford a great deal of help.

Mr. **L. W. Andrew** (Gas Light and Coke) asked everyone present to make sure that individually he had worked out his fuel target, thoroughly understood what it was all about, and was in a position to talk intelligently about it. Each one of them should play his part in bringing home to the public the need for fuel saving and explaining how it could best be achieved. It was in the space-heating and water-heating fields that the most important savings could be effected, and he emphasized how much could be done in this direction by the use of flueless heaters in the autumn and in the spring to shorten, as it were, the major heating season. Space heating was linked up in many instances with water heating. The coke boiler, for example, was a space heater as well as a water heater. But people should be made to realize that for heating small quantities of water the common kettle was an efficient means. He hoped that, post-war, no one would look upon the present fuel target as an acceptable standard. It was nothing of the sort. And after the war he was optimistic enough to believe that the coal fire would rapidly disappear in favour of gas—that was, with gas at a low commodity cost.

The **President** (Mr. G. Dougill) wondered how they should determine their winter–summer ratio of fuel units.

Mr. **Andrew** suggested that they should budget in anticipation of a severe winter.

Mr. **Stredwick** said he was an enthusiastic supporter of gas fires for living-rooms, but a low commodity rate for gas was, as had already been emphasized, essential; and in this regard it was obviously desirable that low rates should be available to all areas of supply, so that a consumer transferring from one district to another could continue to use gas. On the eve of the war efficient and attractive gas fires were being developed which were giving excellent results. He agreed that in present circumstances the advantages of the portable flueless heater should be emphasized.

Mr. **F. G. Read** (Ministry of Fuel and Power) remarked that the major heating load was in the months of December–March, and prior to and after this period it was desirable that gas and electricity should be used in preference to raw coal for intermittent heating. Space heating and water heating could hardly be separated, and in some cases the one appliance served for these two purposes and for cooking as well. Showroom staff could help greatly in showing people how they should allocate their fuel, and with prepayment consumers budgeting should be on a weekly basis. For the heating of a 5-roomed house with four occupants, he suggested the following allocation of fuel units over the months: October, 3½; November, 9; December, 11; January, 12; February, 13; March, 11½; April, 7½; and May, 1½.

Mr. **C. A. Deas** (Hon. Secretary) suggested that the fuel campaign did not concentrate sufficiently on the need for the public to save raw coal. Fundamentally, the aim should be—were this possible—to substitute raw coal by gas. Transmission of gas by pipe saved petrol, rubber, and labour needed for the delivery of raw coal.

Mr. **T. A. Woolf** (Tottenham), speaking of gas usage broadly, said that people who were quite willing to spend 2s. 6d. a day on cigarettes and cinema were averse to spending a few coppers for the warming of a bedroom by a gas fire, and he queried whether the Gas Industry had really "sold" gas as a service in the past, and whether it had adequately presented its case, from the fuel conservation point of view, to the Government.

A vote of thanks to the Author was proposed by Colonel **Bywater**, seconded by Mr. **F. C. Smith** (Gas Light and Coke).

* From a Paper to the London and Southern District Junior Gas Association, Nov. 20.

# Gas Products Prices

### The London Market Nov. 30.

The only item of interest in connexion with the London Coal Tar Products market is that fair quantities of Pitch are being sold on the basis of 45s. per ton naked at Makers' Works. Otherwise no change.

### The Provinces Nov. 30.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1, 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland) Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d; timber preservation and other purposes 4¾d. to 6d. These prices apply as from May 13.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

### Tar Products in Scotland Nov. 28.

Prices and deliveries are well maintained. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Refined cresylic acid is changing hands at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha: 6½d. to 7d. Solvent naphtha: 90/160 grade, 2s. 5d. to 2s. 6d., and 90/190 Heavy naphtha, 1s. 11d. to 2s. per gallon. Pyridine: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

# Gas Stocks and Shares

Stock markets opened firmly on the news from Russia and Dakar, and oil shares were a strong feature on the Anglo-Iranian dividend. Later, apart from some firmness among home rails, the volume of business eased off and price movements became small and irregular. Activity in the Gas Market was also on a reduced scale, but it will be seen that a number of issues registered further improvement. Compared with a month ago no less than 39 stocks or shares in this comparatively small section have risen in value and some of these increases have been quite considerable. In the Official List ordinary stocks were strong features during the month, Commercial, Gas Light units, and United Kingdom Gas Corporation shares being among the best. Alliance and Dublin ordinary was the only stock which failed to maintain the previous week's large increase of 13 and closed 3 lower at 107½. In the Supplementary List a number of debenture stocks improved on the week.

The full Stock Table is unavoidably held over till next week.

**OFFICIAL LIST**

| | | |
|---|---|---|
| Alliance & Dublin ... ... | 105—110 | −3 |
| Associated Gas & Water Undertakings 4 p.c. Cum. Pref. ... | 14/3—15/3 | +−/9d. |
| British Ord. ... ... ... ... | 77—82 | +1 |
| Commercial Ord. ... ... ... | 52—57 | +2 |
| Croydon Sliding Scale ... ... | 110—115 | +2 |
| Gas Light 3½ p.c. max. ... ... | 58—63 | +1 |
| Ditto 3½ p.c. Red. Pref. ... ... | 77—82 | −1 |
| Imperial Continental ... ... ... | 79—84 | +1 |
| South-Eastern Gas Corporation Ord. | 16/3—17/3 | +−/3d. |
| South Metropolitan Ord. ... ... | 73—78 | +1 |
| Ditto 4 p.c. Pref. ... ... ... | 73—78 | +1 |
| South Suburban Ord. ... ... ... | 83—88 | +3 |
| Ditto 5 p.c. Deb. ... ... ... | 115—120 | +6 |
| United Kingdom Gas Corporation Ord. ... ... ... ... ... | 17/6—19/6 | +−/9d. |
| Wandsworth 4 p.c. Pref. ... ... | 82—87 | +2 |

**SUPPLEMENTARY LIST**

| | | |
|---|---|---|
| Brighton, Hove & Worthing 5 p.c. Deb. ... ... ... ... ... | 110—115 | +3 |
| Eastbourne "B" ... ... | 42—47 | +5 |
| Plymouth & Stonehouse 5 p.c. Deb. | 107—112 | +4 |
| Reading 4 p.c. Deb. ... ... ... | 92—97 | +2 |
| Slough 5 p.c. Deb. ... ... ... | 110—115 | +2 |
| Uxbridge 5 p.c. Deb. ... ... ... | 115—120 | +7 |

**PROVINCIAL EXCHANGES**

| | | |
|---|---|---|
| Newcastle 4 p.c. Pref. ... ... | 94½—95½ | +1½ |
| Ditto 3½ p.c. Deb. ... ... ... | 93½—94½ | +1½ |


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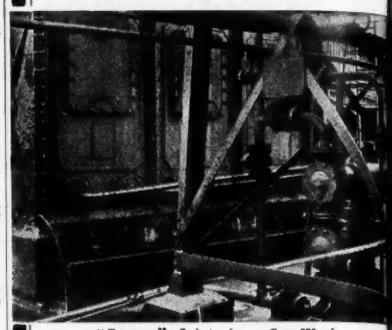

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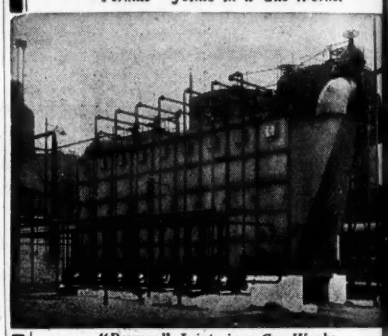

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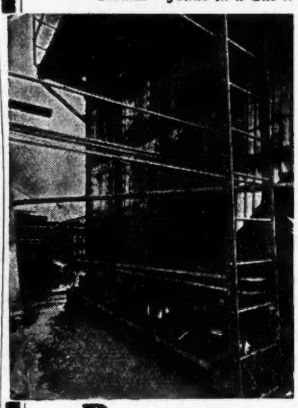

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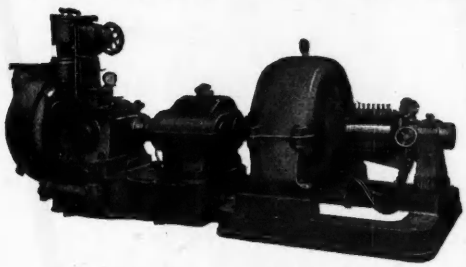

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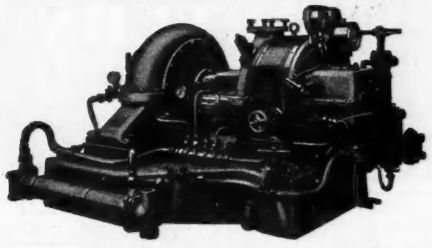

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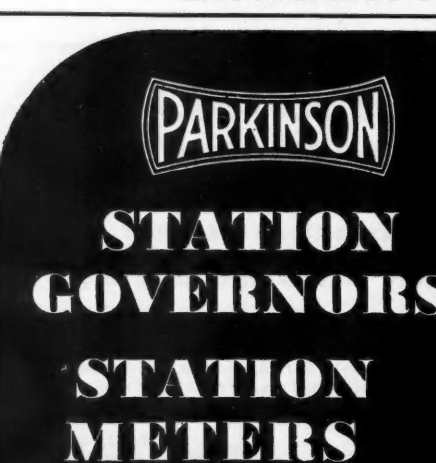

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